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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/761,798	01/21/2004	Cherie R. Kagan	YOR920000186US2	9993

7590 10/19/2005

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EXAMINER

CHAN, SING P

ART UNIT	PAPER NUMBER
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1734

DATE MAILED: 10/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/761,798

Applicant(s)

KAGAN ET AL.

Examiner

Sing P. Chan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 14-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1/21/04</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Election/Restrictions

1. This application contains claims directed to the following patentably distinct species of the claimed invention:

- a. Species A: Self-assembled monolayer is prepared by a stamp.
- b. Species B: Self-assembled monolayer is prepared by exposing the self-assembled monolayer to radiation with a mask.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, claims 1-4 are generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

2. During a telephone conversation with Vazken Alexanian on October 5, 2005 a provisional election was made without traverse to prosecute the invention of Species A, claims 1-13. Affirmation of this election must be made by applicant in replying to this Office action. Claims 14-29 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

3. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by DeGuire et al (U.S. 5,545,432).

DeGuire et al discloses a method of forming metal oxide thin films. The method includes providing a substrate such as Si wafer, glass, solid particles, metal (Col 3, lines 65-67), aluminum, titanium, nickel, alloy with native or thermally-produced oxide coating (Col 4, lines 58-61), or polymeric such as polystyrene, polyethylene or polyimide (Col 6, lines 31-35) and in any solid or particulate form such as flat, corrugated, involute, invaginated, porous, spherical or amorphous (Col 5, lines 1-4), depositing an organic layer of self-assembled monolayer (SAM) (Col 3, lines 65-67), depositing metal oxide thin film onto the SAM to a thickness of 20 Å or thicker films, which are granular with uniform particle size of 50 nm (Col 4, lines 12-24), which are not a monolayer.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 5-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over DeGuire et al (U.S. 5,545,432) as applied in claim 1 above, and further in view of Kumar et al (U.S. 5,512,131).

Regarding claims 5-8, DeGuire et al as disclosed above is silent as to the SAM is deposited by a stamp. However, using a stamp to deposit SAM is well known and conventional as shown for example by Kumar et al. Kumar et al discloses a method for

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forming microstamped patterns on surfaces. The method includes providing a stamp form of elastomeric polymeric material such as silicone polymers, epoxy and acrylate polymers (Col 8, lines 30-45) with indentations defining an indentation pattern, coating the stamp with molecular species, positioning the stamp into position and bring the stamp into contact with the surface of the substrate and held against the surface to hold the species against the surface, removing the stamp to provide SAM on the surface (Col 5, line 62 to Col 6, line 14).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a stamp to deposit SAM onto the surface of the substrate as disclosed by Kumar et al in the method of DeGuire et al to provide a method to conveniently and reproducibly producing a variety of SAM patterns on planar and nonplanar surfaces. (See Kumar et al, Col 2, lines 25-34)

Regarding claims 9-11, DeGuire et al discloses the molecular species for the SAM includes end groups of surfactant with aromatic thiols, alkyl thiols, isocyanide, and trichlorosilane at the ends of the long hydrocarbon chain of SAM. (Col 5, lines 22-42)

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over DeGuire et al (U.S. 5,545,432) in view of Kumar et al (U.S. 5,512,131) as applied to claim 5 above, and further in view of Chrisey et al (U.S. 5,688,642).

DeGuire et al as modified by Kumar et al discloses the molecular species for the SAM includes "fluorinated hydrocarbon" (See Kumar et al, Col 11, lines 56-63) and used to facilitate the attachment of biomolecules on the submicron scale (See Kumar et al, Col 2, lines 29-32). But, is silent as to the "fluorinated hydrocarbon" includes

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(tridecafluoro-1,1,2,2-tetrahydrooctyl) trichlorosilane. However, using (tridecafluoro-1,1,2,2-tetrahydrooctyl) trichlorosilane for SAM is well known and conventional as shown for example by Chrisey et al. Chrisey et al discloses a method of selective attachment of nucleic acid molecules to patterned self-assembled surfaces. The method includes forming a thin film of organosilane (SAM) using (tridecafluoro-1,1,2,2-tetrahydrooctyl)trichlorosilane to form the SAM on a silica slide. (Col 10, lines 29-35)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide (tridecafluoro-1,1,2,2-tetrahydrooctyl) trichlorosilane as a molecular species for forming SAM on a substrate as disclosed by Chrisey et al in the method of DeGuire et al as modified by Kumar et al to provide a method of preparing surfaces, which nucleic acid molecules (NAMs) may be immobilized to form arrays or patterns of NAMs. (See Chrisey et al, Col 3, lines 26-31)

9. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over DeGuire et al (U.S. 5,545,432) in view of Kumar et al (U.S. 5,512,131) as applied to claim 5 above, and further in view of Wefers et al (U.S. 5,059,258).

DeGuire et al as modified by Kumar et al discloses molecular species for the SAM includes hydrocarbon, fluorinated hydrocarbon, halogenated, and phosphate species. (See Kumar et al, Col 11, lines 42-63) But, is silent as to the species is octadecylphosphonic acid. However, providing octadecylphosphonic acid as a species for forming SAM is well known and conventional as shown for example by Wefers et al. Wefers et al discloses a method of bonding phosphonic acid to aluminum hydroxide layer. The method includes providing a molecular species such as long and short chain


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hydrocarbon, carboxylic acids, amine, alcohols, organosilicones, polymeric phosphonic acids such as octadecylphosphonic acid, which will form a SAM. (Figure 1 and Col 4, lines 24-66)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide octadecylphosphonic acid as the molecular species for forming SAM on the substrate as disclosed by Wefers et al in the method of DeGuire et al as modified by Kumar et al to provide any molecular species, which are all equivalents to form the SAM on the substrate.

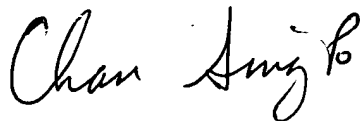
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sing P. Chan whose telephone number is 571-272-1225. The examiner can normally be reached on Monday-Thursday 7:30AM-11:00AM and 12:00PM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher A. Fiorilla can be reached on 571-272-1187. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.


CHRIS FIORILLA
SUPERVISORY PATENT EXAMINER
AU 1734

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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